

**AMENDMENTS TO THE DRAWINGS**

Fifteen (15) replacement sheets of drawings are attached to this paper. The replacement sheets are formal drawings reflecting no substantive change relative to the informal drawings originally filed. The replacement sheets introduce no new matter. Accordingly, applicants respectfully request that the informal drawings originally filed be replaced with the enclosed formal drawings.

REMARKS

Claim 17 is amended, and upon entry of the amendment claims 1-22 will remain pending. Replacement drawing sheets are attached as described above, though there was no objection to the drawings in the Office action.

Claims 1-22 stand rejected as obvious in view of U.S. Patent Nos. 3,449,891 (Shohet) and 5,106,397 (Jaroszczyk). Applicants' detailed response to the rejections is set forth below.

Response to Rejections under 35 USC 103

Claim 1

Claim 1 reads as follows:

An air induction system for an engine to receive intake air, remove contaminants from the intake air, and provide the intake air for delivery to the engine, the system comprising:

a housing having a hollow interior with at least one entryway for receiving intake air into the housing, a contaminant separator for removing contaminants from the air, and an exit for discharge of air from the housing;

a duct positioned adjacent the exit of the housing to receive intake air therefrom for delivering the air to said engine, the duct having an inside defining an internal flow path for intake air and an outside; and

a seal positioned between the housing and the duct for preventing passage of air therethrough;

wherein **the seal is disposed between the outside of the duct and the housing** such that the seal is not exposed to air flowing in the internal flow path of the duct.

Claim 1 stands rejected as obvious in view of U.S. Patent Nos. 3,449,891 (Shohet) and 5,106,397 (Jaroszczyk). Applicants respectfully disagree with the rejection because the prior art fails to show or suggest the claimed air induction system, and in particular fails to show or suggest the system having the seal disposed between the outside of the duct and the housing.

Shohet shows a particle separator assembly (24) which is mounted to a helicopter. As shown in Fig. 4, an exit end (114) of the assembly is positioned to extend into the front or mouth of the engine inlet ducting (112). A seal member (118) is mounted on the ducting (112) in sealing engagement with exit end

(114). As can be seen in Fig. 4, the seal member (118) is mounted on the inside or in the mouth of the ducting (112).

As conceded by the Examiner, Shohet does not disclose a seal disposed on the outside of the duct as required by claim 1. However, the Examiner asserts that it would have been obvious to combine Shohet and Jaroszczyk. The rejection is in error for several reasons.

First, Jaroszczyk does not show a seal disposed on the outside of a duct. Jaroszczyk shows housings 12 and 14, and a urethane ring (52) forming a seal **between** the housings. As clearly shown in Fig. 6 and described at col. 5, lines 28-35, the flange or lip portion 56 of the housing 12 "radially confines" the ring 52, and the ring does not extend outside either of the housings. Accordingly, Jaroszczyk does not show a seal disposed on the outside of either of its housings, regardless of which is considered the claimed "duct".

In order to establish a prima facie case of obviousness, all elements of the claim must be shown in the cited references. In this case, neither reference discloses a seal disposed on the outside of the duct. Thus, the rejection is improper.

Second, even if all elements were shown, the Examiner has failed to provide a motivation or suggestion for combination. The conclusory statement to the effect that the combination would promote tight connection between the duct and filter housing is insufficient and is merely hindsight analysis. There is no motivation or suggestion for combination in the references or in the general knowledge in the art.

Finally, the claimed construction is advantageous over the prior art. In applicants' construction, the seal is disposed between the outside of the duct and the housing such that the seal is not exposed to air flowing in the internal flow path of the duct. (See Paragraph 5 of the application). Therefore, the

seal is unaffected by pressures in the duct, including particularly a sudden rise in pressure due to a surge instability in the engine. (See Paragraph 33). Such a rise may be directed opposite the normal flow. In contrast to the invention, such a rise could be directed against the seal (118) of Shohet, potentially damaging the seal.

For all these reasons, claim 1 is submitted as patentable.

### Claim 3

Claim 3 recites that the seal comprises an annular band clamped along opposite edges to the housing and duct. This feature is also not shown in either Shohet or Jaroszczyk. In particular, Jaroszczyk's clamps 15 are not annular.

### Claim 5

Claim 5 recites that the housing further comprises a nacelle and a frame at a back end of the nacelle. The frame has an opening therein comprising the exit, and a front of the duct is received through the opening. This feature is also not shown by either reference. As shown in Figs. 4 and 7 of Shohet, the exit end (114) of the separator assembly is positioned to extend into the front of the engine inlet ducting (112). Thus, Shohet discloses the opposite of the claimed arrangement.

### Claim 13

Claim 13 recites that the system further comprises a rod which secures the nacelle at the open position so that it will not inadvertently move. Another advantage of the system is its accessibility, which is important during maintenance actions. The nacelle is hinged for swinging movement to permit unhindered access. The rod guides movement of the nacelle and secures the nacelle at an open position so that it will not inadvertently

move. This rod feature and the further features of claims 14-16 are not shown by either reference.

The Office action states that Shohet discloses "a rod (252) securing the nacelle wherein the first end secured to the frame being slidably movable in a slot attached to the frame ...." Shohet actually shows a bypass door (250) arranged like a Venetian blind (Fig. 15). Each panel (250a) is pivotally movable and connected by a pivot rod (252). Bypass door (250) is opened by causing each panel (250a) to pivot about rod (252) by action of a rack (254) and pinion (256). Col. 8, lines 56-59. **The rod (252) clearly does not secure a nacelle at the open position, as claimed in claim 13.** Nor does Shohet's door have the features claimed in claims 14-16. Accordingly, these claims are submitted as patentable for these additional reasons.

#### Claim 17

Claim 17 recites, among other features, that the seal is not exposed to air flowing in the internal flow path and permits relative movement between the duct and the assembly in any direction while maintaining a seal between the duct and the assembly. Neither reference discloses this element of the claim.

In contrast to the claimed construction, Shohet states that his seal permits "either axial or circumferential relative motion" between the separator assembly (24) and the engine (20). Column 6, lines 35-37. The claimed seal allows movement in any direction, meaning axially, circumferentially **and** radially. Clearly, Shohet does not disclose or suggest movement in any direction. Shohet only discloses more limited axial or circumferential motion.

The claimed construction is advantageous, for among other reasons, because the seal does not form a portion of the surface

exposed to the airstream. This construction enables several consequent advantages. Because the seal is not exposed to high pressures, it can be more lightweight and flexible. (See Paragraph 33). In one embodiment shown in the specification, the seal permits relative movement between the duct 28 and the nacelle 26 without contact therebetween, thereby precluding the possibility of damage and maintaining the airtight seal between the duct and nacelle. Additional length in the seal may be included in some embodiments to create a slack or "baggy" portion which further facilitates relative movement. (See Paragraph 34 of the application).

Claim 17 cannot be obvious in view of Shohet and Jaroszczyk if neither reference discloses one of the claimed elements. Accordingly, applicants respectfully request allowance of claim 17 and its dependent claims 18-22.

CONCLUSION

In view of the foregoing, reconsideration and allowance of the application is respectfully requested. The undersigned requests a telephone call from the Examiner if this would expedite allowance of the application.

Applicants do not believe that a fee is due in connection with this response. If, however, the Commissioner determines that a fee is due, he is authorized to charge Deposit Account No. 19-1345.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael G. Munsell". The signature is fluid and cursive, with the first name "Michael" and last name "Munsell" clearly distinguishable.

Michael G. Munsell, Reg. No. 43,820  
SENNIGER POWERS  
One Metropolitan Square, 16th Floor  
St. Louis, Missouri 63102  
(314) 231-5400

MGM/clh

Express Mail Label No. EV 696400998 US  
Mail Stop Amendment